WHAT IS CLAIMED IS:

1. A movable-body apparatus comprising:

a first support member;

a movable body;

elastic supporting means having a twisting longitudinal axis, said elastic supporting means supporting said movable body flexibly and rotatably about the twisting longitudinal axis relative to said first support member; and

driving means for tilting said movable body in a tilting direction about the twisting longitudinal axis, said driving means including a stationary portion provided apart from said movable body, and a moving core formed of a magnetic material, provided on a portion of said movable body, and having a face opposed to said stationary portion.

2. The movable-body apparatus of claim 1, wherein said stationary portion of said driving means includes a stationary core formed of a soft magnetic material and a coil wound on said stationary core.

3. The movable-body apparatus of claim 1, wherein said elastic supporting means includes a pair of torsion springs disposed along the twisting longitudinal axis opposingly with said movable body being interposed.

4. The movable-body apparatus of claim 2, wherein said moving core and said stationary core have faces opposed to each other in an approximately parallel relationship with a spacing being interposed between said opposed faces of said moving core and said stationary core,

respectively, said faces are shifted from each other in a direction perpendicular to the tilting direction, and said faces are arranged such that a superimposing area between said faces viewed from a direction perpendicular to said faces can be changed as said movable body is tilted.

5. The movable-body apparatus of claim 4, wherein said moving core and said stationary core constitute a serial magnetic circuit through said spacing.

6. The movable-body apparatus of claim 1, wherein said moving core is provided on a side of a side surface of said movable body parallel to and remote from the twisting longitudinal axis.

7. The movable-body apparatus of claim 6, wherein said moving core is provided on said side surface of said movable body.

8. The movable-body apparatus of claim 2, wherein said stationary core have opposite end faces with said moving core being interposed between said opposite end faces.

9. The movable-body apparatus of claim 2, wherein said stationary core have opposite end faces lying on a common plane and opposed to said face of said moving core.

10. The movable-body apparatus of claim 1, wherein said moving core is provided on an edge portion of said movable body extending parallel to the twisting longitudinal axis.

11. The movable-body apparatus of claim 1, wherein said moving core is provided on an edge portion of said movable body extending perpendicularly to the twisting longitudinal axis.

12. The movable-body apparatus of claim 1, wherein said moving core is provided on a protruding portion of said movable body extending perpendicularly to the twisting longitudinal axis.

13. The movable-body apparatus of claim 2, wherein said moving core is provided on each edge portion of said movable body about the twisting longitudinal axis, said stationary core with said coil wound thereon is provided on each side of the twisting longitudinal axis, and said moving core and said stationary core constitutes a serial magnetic circuit on each side of the twisting longitudinal axis.

14. The movable-body apparatus of claim 2, wherein said moving core is provided on one edge portion of said movable body, said stationary core with said coil wound thereon is provided on one side of the twisting longitudinal axis, and said moving core and said stationary core constitutes a serial magnetic circuit on said one side of the twisting longitudinal axis.

15. The movable-body apparatus of claim 2, wherein said elastic supporting means includes two sets of paired springs which are capable of torsional and flexure vibrations, whose longitudinal axes are orthogonal to each other and which elastically support said movable body in a two-dimensional torsional manner, four moving cores are provided on said

movable body in a crisscross pattern extending in directions shifted by 45 degrees from each adjacent longitudinal axis of said paired springs, and four stationary cores with said coils are provided such that each corresponding moving core and stationary core constitute a serial magnetic circuit.

16. The movable-body apparatus of claim 2, further comprising a second support member for supporting said stationary core, and a spacer support member for bonding said first support member and said second support member to each other in a predetermined relationship with said spacer support member being interposed.

17. The movable-body apparatus of claim 1, wherein at least one of said elastic supporting means and said movable body is formed of a single crystal silicon.

18. The movable-body apparatus of claim 1, wherein said moving core is formed of a ferromagnetic material.

19. The movable-body apparatus of claim 1, wherein said moving core is formed of a hard magnetic material.

20. The movable-body apparatus of claim 1, wherein said moving core is formed of an alloy including iron and nickel.

21. The movable-body apparatus of claim 1, wherein said moving core, said elastic supporting means, and said first support member are integrally

formed in a common substrate.

22. The movable-body apparatus of claim 1, wherein said stationary portion of said driving means includes a stationary core fixed to said first support member, and a coil wound on said stationary core.

23. The movable-body apparatus of claim 2, wherein each of said stationary core and said moving core includes a comb-shaped portion, and said comb-shaped portions of said stationary core and said moving core are arranged in a meshing manner with spacing being interposed between said comb-shaped portions.

24. The movable-body apparatus of claim 1, wherein said frame member includes an inner frame member and an outer frame member, said movable body includes an inner movable body and an outer movable body which is said inner frame member for supporting said inner movable body through first elastic supporting means and is supported by said outer frame member through second elastic supporting means, said inner movable body is supported flexibly and rotatably about a first twisting longitudinal axis of said first elastic supporting means, and said outer movable body is supported flexibly and rotatably about a second twisting longitudinal axis of said elastic supporting means.

25. The movable-body apparatus of claim 24, wherein the twisting longitudinal axes extend forming an angle of 90 degrees.

26. The movable-body apparatus of claim 1, further comprising a

light deflecting element provided on said movable body, and wherein said movable-body apparatus is constructed as an optical deflector.

27. The movable-body apparatus of claim 26, wherein said light deflecting element is a light reflective surface.

28. The movable-body apparatus of claim 26, wherein said light deflecting element is a diffraction grating.

29. The movable-body apparatus of claim 26, wherein said light deflecting element is a lens.

30. The movable-body apparatus of claim 1, wherein said movable-body apparatus is constructed as an actuator for actuating said movable body.

31. A scanning type display comprising:

(a) a modulatable light source;

(b) an optical deflector including:

a support member;

a movable body;

elastic supporting means having a twisting longitudinal axis, said elastic supporting means supporting said movable body flexibly and rotatably about the twisting longitudinal axis relative to said support member;

driving means for tilting said movable body about the twisting longitudinal axis, said driving means including a stationary portion

provided apart from said movable body, and a moving core formed of a magnetic material, provided on a portion of said movable body, and having a face opposed to said stationary portion; and

light deflecting means for deflecting a beam of light impinging on said movable body from said light source, said light deflecting means being provided on said movable body;

(c) a display screen on which the beam of light from said deflecting means is projected; and

(d) control means for controlling modulation of said modulatable light source and operation of said movable body of said optical deflector in an interlocking manner.

32. An image forming apparatus comprising:

(a) a modulatable light source;

(b) an optical deflector including:

a support member;

a movable body;

elastic supporting means having a twisting longitudinal axis, said elastic supporting means supporting said movable body flexibly and rotatably about the twisting longitudinal axis relative to said support member;

driving means for tilting said movable body about the twisting longitudinal axis, said driving means including a stationary portion provided apart from said movable body, and a moving core formed of a magnetic material, provided on a portion of said movable body, and having a face opposed to said stationary portion; and

light deflecting means for deflecting a beam of light impinging

on said movable body from said light source, said light deflecting means being provided on said movable body; and

(c) an image forming surface on which the beam of light from said deflecting means is projected; and

(d) control means for controlling modulation of said modulatable light source and operation of said movable body of said optical deflector in an interlocking manner.

33. A movable-body apparatus comprising:

a support member;

a movable body;

elastic supporting means having a twisting longitudinal axis, said elastic supporting means supporting said movable body flexibly and rotatably about the twisting longitudinal axis relative to said support member; and

driving means for tilting said movable body in a tilting direction about the twisting longitudinal axis, said driving means including a stationary core formed of a soft magnetic material with a coil wound on said stationary core and provided apart from said movable body, and a moving core formed of a magnetic material and provided on a portion of said movable body;

wherein said moving core and said stationary core have faces opposed to each other in an approximately parallel relationship with a spacing being interposed between said opposed faces of said moving core and said stationary core, respectively, said faces are shifted from each other in a direction perpendicular to the tilting direction, and said faces are arranged such that a superimposing area between said faces viewed from

a direction perpendicular to said faces can be changed as said movable body is tilted.

34. A movable-body apparatus comprising:

a support member;

a movable body;

elastic supporting means having a twisting longitudinal axis, said elastic supporting means supporting said movable body flexibly and rotatably about the twisting longitudinal axis relative to said support member; and

driving means for tilting said movable body about the twisting longitudinal axis, said driving means including a stationary core formed of a soft magnetic material with a coil wound on said stationary core and provided apart from said movable body, and a moving core formed of a magnetic material and provided on a side of a side surface of said movable body.

35. A method of fabricating a movable-body apparatus which includes a first support member; a movable body; elastic supporting means which has a twisting longitudinal axis, and supports the movable body flexibly and rotatably about the twisting longitudinal axis relative to the first support member; driving means for tilting the movable body about the twisting longitudinal axis which includes a stationary portion provided apart from the movable body, and a moving core formed of a magnetic material, provided on a portion of the movable body, and has a face opposed to the stationary portion; and light deflecting means for deflecting a beam of light impinging on the movable body which is provided on the movable body;

said method comprising the steps of:

forming the light deflecting means on a substrate;

forming the moving core on the substrate; and

simultaneously forming the elastic supporting means, the movable body and the first support member in the substrate.

36. The method of claim 35, further comprising a step of forming a groove for alignment on the substrate by etching.

37. The method of claim 36, further comprising a step of fabricating a second support member provided with the stationary portion of the driving means and a groove for alignment, a step of fabricating a spacer support member provided with grooves for alignment on both surfaces thereof, and a step of bonding the first support member to the second support member with the spacer support member being interposed while establishing alignments of the alignment grooves on the first support member and the second support member with the corresponding alignment grooves on the spacer support member through fibers in the alignment grooves.

38. The method of claim 35, wherein said step of forming the moving core on the substrate includes a step of forming an electrode for electroplating on the substrate, a step of forming a photosensitive layer on the substrate with the electrode for electroplating, a step of partially exposing the photosensitive layer by using high-energy radiation light, a step of developing and removing a predetermined portion of the photosensitive layer by utilizing a difference in an etching rate between exposed and unexposed portions of the photosensitive layer, and a step of

electroplating metal in the removed predetermined portion.

39. The method of claim 38, wherein light at a wavelength less than 400 nm is used as the high-energy radiation light.

40. The method of claim 35, wherein in said step of simultaneously forming the elastic supporting means, the movable body and the first support member in the substrate, the elastic supporting means, the movable body and the first support member are formed in the substrate by etching.

41. The method of claim 40, wherein in said step of the elastic supporting means, the movable body and the first support member are formed in the substrate by etching, the substrate is etched only from its surface without the moving core formed thereon.

42. A method of fabricating a movable-body apparatus which includes a support member; a movable body; elastic supporting means which has a twisting longitudinal axis, and supports the movable body flexibly and rotatably about the twisting longitudinal axis relative to the support member; and driving means for tilting the movable body about the twisting longitudinal axis which includes a stationary portion provided apart from the movable body, and a moving core formed of a magnetic material and provided on a side of a side surface of said movable body, said method comprising the steps of:

forming a groove in a substrate;

forming the moving core in the groove; and

forming the elastic supporting means and the movable body in a

portion of the substrate such that the support member is formed in the other portion of the substrate.

43. The method of claim 42, wherein the elastic supporting means and the movable body are formed by reactive ion etching.

44. The method of claim 42, wherein the elastic supporting means and the movable body are formed by etching using an alkaline solution.

45. The method of claim 42, wherein the moving core is formed by electroplating.